REMARKS

Reconsideration of the application is requested.

Claims 1-7 remain in the application. Claims 1-7 are subject to examination. Claims 1 and 7 have been amended.

In items 1 and 2 on page 2 of the above-identified Office Action, claims 1-7 have been rejected as being indefinite under 35 U.S.C. § 112, first paragraph.

More specifically, the Examiner states that claims 1 and 7 specify a computing unit, an allocation logic and a frame timing alignment device. The Examiner further states that the description of these devices is inadequate for instructing one skilled in the art in how to make and use the device without undue experimentation.

First, claims 1 and 7 have been amended to further clarify the claim language. Support for the changes come from page 13, lines 13 to 20 and page 18, lines 17 to 20.

Second, it is respectfully stated that claims 1-7 are believed to comply with the enablement requirement and that an overview of the invention should help the Examiner to more appreciate the invention. The method steps specified in

claim 1 are either conventional method steps which are commonly known from the prior art and/or are explicitly described and explained in the specification. An analogous argumentation applies to the device claim 7.

The goal of the invention is to synchronize a mobile radio receiver with a frame structure of a radio signal received from one specific base station of a plurality of a base stations.

As it is explained on page 13, line 6, to page 15, line 2, each base station transmits a unique sequence of N synchronization codes within a frame. This is stated in the second paragraph of claim 1 and forms a precondition of the frame synchronization method according to the invention.

For a better understanding, we address two examples, which are both explained in the specification.

The difference between the two sequences (denoted as FBSi and FBSj in the specification) transmitted by different base stations may be that the two sequences contain different elements, i.e. one sequence contains at least one frame synchronization code that the other sequence does not contain. For instance, the transmitted sequence of a first

base station is (c1, c2, ..., cN) and the transmitted sequence of a second base station is (c1, c3, ..., cN, cN+1). Obviously, the synchronization code c2 is not contained in the second sequence.

Or the difference between two sequences transmitted by different base stations may be that the same frame synchronization code may occur several times in one sequence and not the other. As an example, the sequence from the first base station reads (c1, c1, c2, c3, ..., cN-1) and the sequence transmitted from the second base station reads (c1, c2, c2, c3, ..., cN-1). Obviously, both of these sequences contain the same elements (codes) but have different numbers of identical codes.

Now, according to claim 1, the following method steps are performed.

a). The third paragraph recites detecting and decoding the frame synchronization codes received at the mobile radio receiver.

All codes (i.e. the elements of the code sequences) are known in the mobile radio station MS (see page 13, lines 13 to 20). Thus, as it is explained on page 15, lines 4

to 20, the radio receiver simply detects N consecutive codes starting at any arbitrary time. As an example, a given base station transmits the specific code sequence (c1, c2, c3, ..., cN), however, it may be the case that the mobile station detects the sequence (c3, c4, ..., cN, c1, c2).

Detection and decoding of transmitted codes which are known in the receiver are one of the most basic data processing steps in radio receivers and is well-known in the prior art. A person skilled in the art knows how to detect code sequences known in the receiver. Only to present a further example, also the slot synchronization step, which is performed prior to frame synchronization, relies on code detection/decoding (namely of the first synchronization code cp transmitted via the first synchronization channel SK1, (see page 12, line 7, to page 13, line 4).

b). The fourth paragraph of claim 1 relates to allocating a code parameter to each of the detected and decoded frame synchronization codes, the code parameter characterize each of the detected and decoded frame synchronization codes.

The allocation of a specific code parameter to a specific

detected code is explained on page 15, line 22, to page 16, line 6, by the way of a very simple example. Each synchronization code cn, n = 1, 2, ..., N, (n is the code index) is allocated the code index n as a code parameter. Thus, in this example, the code parameter of code cl is 1, the code parameter of c2 is 2, and so on. Let c3, c4, ..., cN, cl, c2 be the received code sequence. Then, the allocation unit outputs the code parameters 3, 4, ..., N, 1, 2.

We do not believe that it is necessary to provide a circuit example for such simple functionality. As it is apparent for a person skilled in the art, the allocation unit could, for instance, be established by a lookup table associating the code parameters to detected codes.

c). The fifth paragraph of claim 1 relates to identifying the predefined sequence transmitted by the specific base station on a basis of N consecutively received code parameters, resulting in an identified sequence.

This identification step is described on page 16, lines 4 to 18.

Denoting the sequence of code parameters obtained in the

allocation step by K(cl), K(c2), ..., K(cN) according to the application (it is to be noted that this sequence reads 1, 2, ..., N in the case that the code parameters are merely the indices of the codes), the identification of the predefined sequence transmitted by the specific base station is performed by calculating the function value of the function

$$F = \sum_{n=1}^{N} (K(cn))^{p} .$$

As F is a function which is invariant against cyclic shifts of the code parameters, see page 16, lines 8 to 10, irrespective of the specific cyclic shift of the received code sequence, the function F will always yield the same value.

Take the example given above. Irrespective whether the received code sequence is the transmitted code sequence (cl, c2, ..., cN) or the cyclic shifted code sequence (c3, c4, ..., cN, cl, c2), the function value of the function F is the same, namely, $1^2 + 2^2 + \ldots + N^2 = 3^2 + 4^2 + 5^2 + \ldots N^2 + 1^2 + 2^2$ (for the specific case K(cn) = n and the example p = 2 as outlined on page 16, line 14, of the application).

Thus, due to the cyclic invariance of F with respect to the code parameters K(cn) associated to the detected synchronization codes cn over a frame interval, and due to the fact that the sequences of synchronization codes transmitted by different base stations are different (see the second feature of claim 1), the function value F uniquely identifies transmitted synchronization code (and also the base station) of which a sequence of synchronization codes has been detected.

We believe that a person skilled in the art will not have any problems to implement the computing unit for performing the above explained simple calculation of function F, i.e. the step of identifying the predefined sequence transmitted by the specific base station. As it is obvious for a person skilled in the art, this calculation may easily be implemented in hardware or performed by a processor. In whatever case, the calculation as such is well defined and no undue experimentation is needed.

d). The last paragraph of claim 1 relates to synchronizing the mobile radio receiver with the frame structure of the radio signal received from the specific base station by

aligning a timing of the frame structure used in the mobile radio receiver with a characteristic time of the identified sequence.

This step is described on page 17, lines 6 to 17. As the sequence transmitted from the specific base station is now known, frame synchronization is possible. Referring to the above example, the mobile receiver received the sequence (c3, c4, ..., cN, cl, c2), whereas the identified sequence transmitted from the mobile station was (cl, c2, ..., cN). Now, the frame structure used in the mobile receiver has to be aligned to the timing of the received sequence. For instance, as in the identified transmitted sequence (cl, c2, ..., cN), the specific code cl represents the frame beginning, the frame structure used in the mobile receiver has to be aligned to the timing of the code cl in the received sequence (c3, C4, ..., cN, el, c2). Such synchronization step, which is based on a known reference timing (in this example the reception time of the first code cl of the identified transmitted code sequence) is standard practice in the related art and must be performed in any synchronization procedure.

We believe that on the basis of the above explanations, the

enablement rejection has been overcome.

It is accordingly believed that the claims meet the requirements of 35 U.S.C. § 112, first paragraph. The above-noted changes to the claims are provided solely for clarification or cosmetic reasons. The changes are neither provided for overcoming the prior art nor do they narrow the scope of the claim for any reason related to the statutory requirements for a patent.

In view of the foregoing, reconsideration and allowance of claims 1-7 are solicited.

If an extension of time is required, petition for extension is herewith made. Any extension fee associated therewith should be charged to the Deposit Account of Lerner and Greenberg, P.A., No. 12-1099.

Please charge any other fees that might be due with respect to Sections 1.16 and 1.17 to the Deposit Account of Lerner

and Greenberg, P.A., No. 12-1099.

Respectfully submitted,

For Applicants

RALPH E. LOCHER
REG. NO. 41,947

REL:cgm

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Lerner and Greenberg, P.A.
P.O. Box 2480
Hollywood, Florida 33022-2480
Tel.: (954) 925-1100
Fax: (954) 925-1101